Gaia and the Environmental Apocalypse in Superhero Comics and Science Fantasy

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Abstract:

'Gaia', the metaphorical figure used by James Lovelock to evoke the complex interactions between the elements that make up the earth's biosphere has evoked variable responses from audiences in different disciplines. Considered to be somewhat of a maverick by many natural scientists, he has been embraced by science fantasy writers and by scholars at the cutting edge of the social sciences such as Bruno Latour, who, dissatisfied with the modes of writing available to academics, are looking for alternate ways of addressing the climatic catastrophe that occupies so much of the contemporary public discourse. Influential critics like Dipesh Chakrabarty and Amitav Ghosh argue that genres that use 'realism' as their preferred stylistic mode have been inadequate in their ability to represent the cataclysmic disasters that often signal climate change. Instead, scholars are turning to science fantasy to model projections of climate futures. The use of techniques of temporal and spatial disjunction that de-centre humans vis-a-vis the universe may be one of the ways of projecting an alternate destiny for our planet – a destiny where it is the environment, by fostering active communication between species, that establishes the moral code that we all live by. For superhero comics that use science fantasy to routinely narrate stories about industrial scale disasters, 'unreal' and fantastic forms may be one of the ways in which planetary disasters may be thematised. This essay uses some Indian superhero comics and Western science fiction novels to explore images of climate catastrophe with a special focus on the figure of Gaia.

The article focuses primarily and almost exclusively on the theme of monumental climatic events and their catastrophic impact on human survival and well-being, but the arguments and insights it enunciates are peculiarly apropos to the Covid pandemic, especially when one takes a close look at certain compelling questions, such as the potential of the virus to endanger the entire human species; or the mystery surrounding its origins.

Keywords: Biosphere, science fantasy, climate futures, superhero comics, Covid Pandemic

Introduction

> The bulk of the city had long since vanished, and only the steel-supported buildings of the central commercial and financial areas had survived the encroaching flood waters...Where these broke surface giant forests reared up into the burning dull-green sky, smothering the former wheat fields of temperate Europe and North America...the growing ascendancy of amphibian and reptile forms best adapted to an aquatic life...inverted the ecological balance...the genealogical tree of mankind was systematically moving backward in time...

> JG Ballard, *The Drowned World*

'Climate futures' – radical climate change and their catastrophic expression- do not lend themselves easily to social science theorization.[1] At a time when academic disciplines are being pushed to their limit by the demands of human and other life forms to imagine speculative futures, some scholars have turned to myth and fantasy for inspiration. Thus, Donna Haraway (2014), inspired by the horror fantasy writer HP Lovecraft, has coined the term *Chthulucene,* after his character, the chthonic and monstrous Cthulhu, to describe the age in which we live where evolutionary time is no longer possible to separate into neat categories of what was in the past and what will occur in the future, and where the very pollutants of the Earth acquire creative potency, generating new forms of life from 'dead' matter. (see also Helmreich 2016) The idea that the earth itself is a living, self-regulating entity constituted by the symbiosis of all living organisms, formulated by James Lovelock (1979), achieved recognition only when it was articulated metaphorically through the figure of Gaia or Mother Earth in Greek mythology. Bruno Latour was

even inspired to eschew the academic mode of presentation altogether to create a play, *Gaia Global Circus,* along with a team of playwrights and actors. (Latour 2017)

Why are 'realistic' modes of writing unable to deal adequately with climate change? Writing as a historian, Dipesh Chakrabarty informs us that one of our central concerns with climate change may have to do with our experience of temporality – that "the past, present and future may no longer be connected by a certain continuity of human experience." (2009: 197) For Chakrabarty (2009), history is limited by the scale of human events and experience and is not able to conceptualise temporality on the geological scale needed to tackle climate change or to think of human agency in species terms. Amitav Ghosh, an anthropologist by training, and a novelist by profession, and one who uses literary journalism to address important socio-political issues, goes even further to say that all literary genres that use the conventions of realism whether literary or scientific are inadequate in this regard precisely because they are based on the same modernist premises that created the conditions for climate change in the first place. He suggests that it is the 'low' genres, such as science fiction and gothic fantasy, genres inspired by the epics that deal with radical time shifts ranging from the origin of the cosmos to our present, which may be best suited to deal with such subjects. (Ghosh 2016) Taking a cue from Ghosh's work, my paper will focus on some of these low genres, that is, superhero comics and science fiction novels. Can these be considered to be a part of the newly emergent genre of climate fiction or are they too fantastical to be able to engage seriously with the scientific and technological concerns that this topic demands?[2]

It is often said by comics' scholars that superhero comics are the closest things to myths in our modern desacralized times since they self-consciously use the aesthetics that we associate with epic narratives to vitalise their stories – using larger than life, supra-real figures to pose

philosophical questions. (Fingeroth 2004) While the epics tend to set their stories in the distant past, superhero adventure comics are usually set in an alternate present or a distant, but possible future using forms of temporal disjunction already available in the epic genre to pose questions in the subjunctive or the 'what – if mode'. Thus, science fiction conventions are used to project futuristic scenarios about climate change, and species destruction within the framework of planetary time. In the next section, I examine a set of superhero stories that explore these issues using antinomian figures such as world protectors, galactic villains, and demigods.

Superheroes and Climate-Fiction

Superheroes are generally recognised by the traits that they all share: extraordinary abilities; a strong moral code, an origin story that accounts not only for the moral code that they follow but also explains their powers; highly sexualised bodies that appeal to a largely adolescent male readership; 'visual branding' by means of an easily recognisable costume; a secret identity which enables them to lead double lives; one or more antagonists with extraordinary powers, and finally the world that they inhabit is an alternate version of the world to which the readers of the comics belong. (Stromberg 2017: 136) Given their dominant roles as protectors of society, superheroes also tend to be seen as validating the status quo and standing *for* rather than *against* established authority and the social order. In the words of the writer of one of India's most popular superhero series *Nagraj*, Anupam Sinha, "Superheroes are reactive figures. They are not creative like the super villains who want to reorder the world, and their powers are defined by the enemies that they have to defeat. This is why strong villains are necessary for the success of superhero stories."[3]

In the light of the character traits delineated above, the superhero genre should be ideally suited for stories about environmental issues such as climate change. While superhero

stories as a comics' genre long precede our current taste for climate fiction, there have been attempts to harness this archetype to deliver ecological messages. (see Clode and Stasiak 2014) Thus, 'Eco superheroes' created specifically to sensitise children about environmental issues have been around since the 1990s in the West. One of the more popular ones is *Captain Planet and the Planeteers*, a cartoon show on television.[4] In a departure from canonical superhero stories, the Captain Planet show did not have a clearly articulated super villain to serve as a counterpoint to the hero – a reflection perhaps of the complex nature of the problem of climate change. Instead, particular episodes presented a range of environmental enemies embodying themes such as consumerism, pollution and social injustice. (Bell 2014) Critics such as Donna Lee King (1994) have argued that a television show that relies on corporate sponsorship and advertising is unlikely to send out a clear message about environmental protection to children. In fact, figures such as Captain Planet may also simplify the problem by devolving public responsibility onto the figure of the superhero saviour who is also more often than not the protector of the status quo. (Bell 2014)

In India, Raj Comics, a publisher who is famous for popularising the superhero genre in India with more than 20 superheroes in the stable, recently brought out a *Covid-19* special issue featuring its oldest superhero character *Nagraj* (Serpent King) against a new villain, *Coronaman*, who is bent on destroying the planet with the aid of his virus minions. (Gupta and Gupta 2020) The Government of India realising the potential of the superhero archetype as a pedagogical tool, has also sponsored the creation of its own superhero called *Vaayu* (Air) whose chief super power seems to be an ability to tell morally improving stories about hygiene especially in the light of the Corona epidemic. (Khaiwal and Mor, 2020)[5] Climate change as a subject is beginning to appear more frequently in this genre of storytelling, but it is more a backdrop against which adventures take place, rather than the central theme.[6]

Superheroes, Nature, and Alternate Worlds

Samhaar (The Gathering, 2007a) and *Phunkaar* (Poison Breath, 2007b) are two Raj Comics publications written by Jolly Sinha and illustrated by Anupam Sinha with the superhero Nagraj. The captions that introduce the stories read:

> There is a theory that when there is an imbalance on the planet then Nature herself shows her ineffable aspect and gathers together in one place all those who are the cause of the imbalance.

> (Jolly Sinha, 2007, *Samhaar*)

> There are invisible forces that influence us – the sun's rays, the gravitational pull of the Earth, magnetic forces, and radio waves and so on. The most powerful of these forces is the magnetic field because it surrounds us and has a powerful effect on our minds – neither Nagraj's serpents nor his poison breath will save you from its influence.

> (Jolly Sinha 2007, *Phunkaar*)[7]

In *Samhaar*, *Prakriti*, Mother Nature, and her twin brother, *Prakrit*, appear as chief protagonists of the story. Prakriti is the protector of earthly species, who works through intermediaries such as Nagraj and his companion in arms, *Dhruv*. Prakrit is a force of destruction, who is bent on changing the chemical composition of the biosphere so that new species may be born who are more mindful of the environment. The superheroes prevail and the earth is saved but Prakrit is not a conventional super villain. He represents the vital, creative aspect of nature responsible for creating life from the elements present in the biosphere. Since the dominant element in creation on

earth is water, he tries to change the chemical composition of water so that it will be harmful to humans, the species most responsible for environmental degradation.

Phunkaar is a story about a parallel earth, a mirror opposite of the one that we live in. Due to a shift in the earth's magnetic pole, an event that occurs once every 5, 00,000 years, magnetic activity intensifies and brings the parallel earth into its orbit. Gaping holes, suddenly appear in our atmosphere, that allow beings from the alternate earth to appear in our world while simultaneously enabling oxygen from our atmosphere to seep through. The other earth has an alkaline atmosphere and humans from that world find it difficult to breathe our oxygen rich air. Nagraj's poison breath is also alkaline and proves to be life saving for them and a small portion of his genetic substance is implanted in his female alter ego from that world.[8] His son, born through artificial insemination becomes the saviour of the parallel earth breathing new life into the atmosphere poisoned by the oxygen from our atmosphere.

It is worthwhile to reflect on the idea implicit in these super-hero stories that humans as a species and the earth as we know it may be just one of the many living forms that populate the galaxy. In *Phunkaar* we are told that there are many earths that occupy the same space and the only reason why they are not visible to each other is because they vibrate on different frequencies. The idea of multiple earths with variants of the same super hero characters in all of them were popularised by American comics many decades ago. Readers of comics are also familiar with the idea that variations in the atmosphere as well as planetary arrangements of different kinds can lead to the emergence of new capabilities that seem to be beyond human imagination. What seems to be novel in these Nagraj stories is the way in which atmospheric variation is conceptualised as poison. Life threatening pollutants for humans on one of the earths is life giving on another one.

In an uncanny echo of James Lovelock's words, Sinha seems to be saying that if we contemplate pollution from the perspective of the planet as a whole (Gaia), it may be an anthropocentric idea. Thus, for example, oxygen first emerged as a pollutant that threatened anaerobic life forms that had to radically alter their lifestyles to survive (Lovelock 1979: 103).

Human inhabitants of any one of these multiple earths may not be able to adapt their finite forms to these rapid changes, but Nagraj, the human-*naga* hybrid, does manage to adapt his bodily form to the changing environment in order to rescue humans and their planet from extinction.[9]

A Ramayana for Our Times

Ramayan 3392 AD is a comics' series published by Graphic India that attempts to re-frame the Ramayana epic in terms of the superhero/ science fantasy genre against the backdrop of anthropogenic climate change (Chopra and Kapur 2006). Inspired by the cyberpunk sub-genre[10] in science fiction the story is set in a dystopian future where the Earth itself has been radically transformed by centuries of lethal warfare. The events of *Ramayan 3392 AD* unfold on a landscape dominated by a mix of cities moulded by virtual reality, dense tropical jungles and deserts where the atmosphere is so toxic that it is impossible to sustain human life unaided by technology.

Set in a time after the Mahavinaash (Great Destruction) which destroyed human civilisation as we know it, the Earth is reduced to two large continents. Aryavarta, the dominant continent became home not only to the surviving humans, but also to other creatures that rival humans in their cultural sophistication such as the *vanaras* (descended from apes), *bhalus* (descended from bears), *garudas* (descended from kites), etc. This detail draws from early traditions in Indian mythology that extend cultural sophistication to certain non human species. (Hiltebeitel 1978) The dominant race of humans now known as Armagarians after the city state of Armagarh, have

inherited solar technology (*shakti kundali)* that protects them from the toxic atmosphere, a relic of the great war that led to the Mahavinaash, and gives them a developmental advantage over other species.

The state of Armagarh is governed by a council headed by Maharaj Dashrath. Rama and Lakshman are the sons of his first wife, Kaushalya, who is dead when the story begins, and Bharat and Shatrughan are the sons of his second wife Kaikeyi, who is also a councilor.[11] The brothers are close though Rama is marked out by his distinctive blue skin, a sign that he originated in another *loka* (dimension) as we later learn.

Nark[12] is a dark continent to the south of Armagarh and is ruled by Ravan, the Asura Prime. Ravan, an artificial being created as a weapon during the Great War, played an important role in re-creating civilisation on Nark. Badly affected by nuclear radiation during the Great War, all life in Nark was reduced to 'primal jelly'. (2014: unpaginated) Ravan re-created many of the species that inhabit Nark by infusing them with artificial technology. *Rakshasas*, *Pishachas*, *Daityas*, *Brischik* and *Yakshas*, all character types found in the Ramayana that refer to anti-gods, demons, and monsters, are among the many species found on Nark.[13] When the story begins Ravan is bent on expanding his empire, threatening the outposts of Aryavarta. The councilors of Armagarh, made complacent by their superior technology and civilisation, refuse to acknowledge the threat posed by Ravan. In fact, the council has been infiltrated by *asuras* (anti-gods) disguised as humans to weaken it from within and even the gods who are supposed to guide the day-to-day affairs of the state are revealed to be holographic simulations manipulated by the *asuras*.[14]

Rama and Lakshman are sent to govern the sleepy outpost, Janasthan that lies on the outskirts of Armagarh. It is attacked by Ravan's army soon after Rama and Lakshman arrive there.

Rama's army is heavily outnumbered though they put up a brave fight much to the surprise of Vivshan (Vibhishana in the Ramayana), the leader of the *asura* army and Ravan's younger brother. Rama and Vivshan agree on a truce against the advice of their senior officers as this act is seen to be a violation of the warrior code of humans and *asuras* alike. Rama agrees to surrender if the women and children are allowed safe passage out of Janasthan, and Vivshan, impressed with Rama's compassion, agrees. Back in Armagarh, Rama is exiled for 14 years as punishment for violating the *kshatriya* (warrior) code of honor. The story then shifts to the deserts of Jara where Lakshman is seen fending off a savage attack by the *kiraats*, the wild assassins of the dessert. We learn that he has left Armagarh in search of his brother after evading several assassination attempts. He is rescued by Vishwamitra, one of the seven seers who helped restore human civilisation after the destruction wrought by the Mahavinaash.

Lakshman and Vishwamitra manage to locate Rama, who is destined to redeem the world and rescue it from its current crisis.[15] Vishwamitra takes the two brothers to the secret city of Mithila that lies deep within the Dandakaranya forest close to Janasthan. (We learn that the true intention of the *asura* attack on Janasthan was to locate and gain control of Mithila). Our heroes arrive in time to save Sita from the *asura* hordes led by Tadaka and her two sons, Marich and Subahu. Vishwamitra reveals that it is Rama's destiny to protect Sita, the daughter of the Earth, who, with her power to transform and regenerate nature, is the key to the world's salvation.[16]

This story arc is spread over eight issues collected in one volume. *Ramayan 3392 AD* was then 'reloaded' with Ron Marz[17] as editor who sought to locate it within the framework of the archetypal hero myth elaborated by Joseph Campbell (1949).[18] The story continues with the escape of Rama, Sita and Lakshman to the city of Panchavati ruled by the three *asura* siblings, Dushan,

Khara and Soornaka (Surpanakha in the Ramayana). Related by kinship to Ravan, they fled Lanka many years ago to escape from his control. Panchavati, portrayed as a city of unimaginable depravity, is modelled on Rome in the last days of the Roman Empire, complete with gladiatorial games in which warriors of different species fight with each other. Sita is captured by Ravan, disguised as Vishwamitra, who we later learn was killed during the escape from Mithila. Rama and Lakshman are sold as slave combatants in the Games. They manage to escape from Panchavati and wander into the Kishkinda forest where they join Shugreav's rebel army to fight against the tyrant Baali, ruler of the *vanara* kingdom. The series ends here rather abruptly as there were no further issues published by Graphics India.

In keeping with the cyberpunk framing of the story, *Panchavati*, the forest where Rama and Sita spent many idyllic years during the period of exile in the Ramayana, is portrayed as a decadent city, refuge to all the beings that have been cast out of their respective societies. Pockets of habitation are separated by vast expanses of desert, made unlivable by noxious fumes in the atmosphere, and dense forests teaming with mutant creatures. *Ramayan 3392 AD* seems to confirm Amitav Ghosh's contention that fantasy may be the only mode in which we can tell stories about climate change.

Campbell's idea that important mythic figurations continue to live on in desacralised form in popular culture is best exemplified in superhero comics. The Nagraj comics discussed in the previous section address contemporary concerns regarding environmental pollution through anthropomorphic figures inspired by Indian folklore and mythology. *Ramayan 3392 AD* also presents a series of anthropomorphisms that engage with forms of distributed geological agency

and radical climate change, precisely those very concerns that the forms of realistic writing seem unable to thematise. (Chakrabarty 2009, Ghosh 2016)

Gaia, Distributive Agency, and the Superhero Mythos

Scientists sometimes take recourse to metaphors when communicating their findings to the lay public (Das and Dasgupta 2000). Lovelock gave the name Gaia to the entire surface of the earth, its atmosphere and all those who live upon it that interact symbiotically with each other constituting a self-regulating entity. Even though he did not wish to convey the impression that this self-regulating entity is a sentient being, once it acquired a proper name it also acquired a face. In stories based on Hindu mythology Prakriti, the dynamic aspect of Being becomes Mother Nature as we saw in the Nagraj story mentioned previously. Sita, whose name literally means furrow, is born from the earth and discovered while her father King Janaka performed the ritual ploughing of the earth to increase her fertility. In *Ramayan 3392 AD* the living earth that Lovelock conceives as a cybernetic system with feedback loops that coordinate the relations between its parts is given the persona of Sita – an animistic figure that embodies organic creativity. Paradoxically, Ravan, who is also presented as a kind of negative demiurge who creates new species from the radiation affected environment of Nark, should also be an aspect of Gaia if we follow Lovelock's argument. He is born from the nuclear explosion that laid the earth to waste. The seemingly miraculous development of intelligence among animal species, as well as Ravan's ability to create new beings from nuclear waste, becomes plausible in terms of the Gaia hypothesis. According to Lovelock the earth has experienced many events of radical climate change, and thus, many different climate regimes through her history. Pollutants like oxygen, excreted by the first anaerobic, microscopic life forms that were supported by an atmosphere dominated by carbon dioxide, became the

chemically dominant gas in the atmosphere that came to support mammalian life forms such as humans in later aeons. From this perspective, the denizens of Nark maybe the future inheritors of the planet and the embattled humans of Armagarh, living in an artificially enhanced atmosphere, the last members of a species on the verge of extinction!

The Gaia hypothesis emphasises the importance of a distributed or geological agency in the creation of and sustenance of the self-regulating entity that is the earth. The bio-sphere is an assemblage of disparate organisms and elements that together manipulate the atmosphere to suite their particular needs. Earth's matter has forms of self-organisation that are immanent, forms that enable, in fact, actively encourage the co-habitation of different species all of whom build their respective milieus from the plenitude offered by the biosphere. Ravan, in *Ramayan 3392 AD*, is a case in point. If Sita represents the organic interaction of multiple earthly beings, co-inhabiting the earth, then Ravan is a form of technological singularity, the anthropomorphic shape taken by the interconnection of countless nanites with the power to grow and shape the environment they live in so that the line between the virtual, produced by cybernetic networks of the nanites (*yantra* technology), and the real as represented by earthly beings, becomes blurred. (Vinge 1993) However, the abrupt cessation of the series does not allow any of these ideas to be explored fully.[19]

Supposing we were to explore the connections between the contrapuntal figures of Sita and Ravan further, beyond the stark binary of organic creativity and technological instrumentality suggested by the series story arc, where would this lead us? Heidegger (1977) says that technology is a mode of revelation that works by 'unconcealing' the energy in nature, by unlocking, transforming, and distributing it. It is a form of 'standing-reserve' and while humans may be able to conceive and carry through limited projects, they do not control 'unconcealment' itself.

(1977:16-17) In a discussion about Gilbert Simonden's concept of 'technical mentality' Brian Massumi amplifies this idea, locating technological invention at the heart of ontogenesis itself. Thus, in this view technological invention is not the imposition of a pre-given form on inert matter. Instead, an invention is the sudden coming together of functions that were latent in substances that till that time led separate existences. An invention is the sudden revelation or manifestation of hidden possibilities in different substances that actualise themselves as functions interacting with each other to form self-regulating entities. Causality, in this view, is circular or teleological; it is not conceived as a linear relationship in which cause precedes effect. (Massumi et. al. 2009) This is precisely the scenario presented in *Ramayan 3392 AD* even if, "causality is veiled in darkness". (Heidegger (1977:7) Due to the limitations of the superhero genre with its rigid opposition between heroes and villains, Ravan cannot be conceptualised as a creator participating in the process of bringing forth beings and objects from their concealment in nature. (1977:11) It is Sita who is cast in that role though at the point at which the series ends she is still unaware of her powers. However, the idea that technicity is essentially involved in embodiment – in the making of bodies – is introduced through the figure of Ravan in this story even if the idea of distributive agency is not explored. (Wolfe 2008: 30)

Inter-Species Co-Habitation and Future Worlds

What would it mean for the human imagination if it was the environment that determined the values and moral code for the universe as such? HP Lovecraft is one of the pioneers of 'weird' fiction, who used the attitude of uncertainty fostered by the 'fantastic' to explore the limitations of human consciousness and posit a world in which the ideologies and philosophies of humankind

are largely inconsequential. Lovecraft generates a sense of cosmic horror in his stories by creating pre-historic monsters, rather than through unexpected calamities such as comets crashing into the earth which cause environmental apocalypse. However, there are writers of science fiction, who, inspired by Lovecraft perhaps, combine 'realism', i.e., what may seem scientifically plausible – with fantasy to create 'monsters' (aliens) who are not monstrous. This enables them to de-centre humans from the universe by creating counter-intuitive representations of the world that still has truth-value (Hull 2006).

Science fantasy, the narrative genre that has had a long-lasting influence on superhero comics often deals with temporal disjunctions, using the subjunctive possibilities of the distant future to explore the uncanny relationships between humans and nonhumans thrown up by the threat of climate change (Seed 2011). *The Drowned World* (2006) by JG Ballard, written long before climate fiction came to be recognised as a distinct genre, explores the modalities of human-nonhuman relations by thinking of time not as a going forward, but as a form of devolution or going backwards so that with climate change all organic forms of life begin to devolve to what they were in the Triassic age.[20] The cause of climate change that has led to global sea levels rising is left unclear in the story though there is a vague mention of solar storms as a cause of severe climatic disruption. Time is explored as a form of cellular memory of our geological history in this novel and the only way to survive in this new water world is to embrace the changes taking place in our biological structures.

Historians and novelists discussed by Chakrabarty and Ghosh whose writings are circumscribed by the conventions of narrative realism with its focus on the distinctiveness of particular spaces and times, are unable to conceive of human experience in any but individualistic

terms.[21] Humans may be able to intellectually comprehend the idea of species, but never experience species being themselves. Categorization into species, always associated with other beings that inhabit our planet, becomes a mode of instrumentalization, largely serving limited human ends rather than genuine forms of unconcealment and knowing that Heidegger describes.

It is in Orson Scott Card's multivolume series *Enders Saga* that the consciousness of species being, and the attendant problems associated with co-habitation are posed, and framed in terms of the Gaia hypothesis. But first, I will present the story in brief.

All humanity is at war with an alien, bee-like species bent on colonizing the earth. The formics or 'buggers' as they are known colloquially have used their advanced military and space technology to ravage large swaths of the earth's surface. Ender, a brilliant strategist, is able to save humanity by exterminating the species. Only a single member of the species remains – the larva of a potential hive queen- and it is through a telepathic link with her that he realizes that the formic did not know that earth was inhabited by an intelligent species. when the planetary authorities in charge of the war effort decide to train child soldiers in a last-ditch effort to save the planet. They assume that children with their natural flair with video games have the potential for unconventional thought. Andrew Wiggen or Ender, a boy of 10 years, proves to be a brilliant strategist and can destroy the formics' home planet and exterminate the species. Ender thought that he was playing a war game as part of his military training. It is only later, when the only surviving member of the formic species, a Hive Queen larva still wrapped in her cocoon communicates with him telepathically and he realizes that the formics were unaware that humans were a sentient species. An expansive, space faring species, they used space travel to explore new worlds in which to settle. What the humans took to be an invasion was actually an attempt at terraforming the earth to

transform it into a formic friendly habitat. Once they realized that humans were an intelligent species the formics tried to disengage from combat, but it was too late for the survival of their species. The fact that after the first few offensive attacks the formics largely fought a defensive war was not lost on the Earth's military leadership who assumed that they had learned enough of the enemy's tactics to turn the offensive on them.

The first novel *Ender's Game* (1985) provides the context for the philosophical questions that are posed in the three novels that follow, viz. *Speaker for the Dead* (1986), *Xenocide* (1991) and *Children of the Mind* (1996), all of which expand on the theme of co-habitation between different kinds of intelligent species and the moral conundrums that emerge when the ethical principle – 'respect for life' is in conflict with the instinct for species survival that sees the alien as the dangerous Other.[22] The second novel in the series is set in the distant future when humans have adopted the formic technology of space travel and instantaneous communication between star systems via the ansible device to colonise far-flung planets in our solar system.[23] Ender is still alive and comparatively young, thousands of years after he had unknowingly destroyed the formics' home world.[24] He travels from planet to planet in search for a suitable habitat for the Hive Queen larvae and finally finds one on Lusitania – home to the pequeninos or 'piggies', so named by humans because of their porcine snouts. The planet also plays host to a small colony of humans. The humans in Lusitania live in a state of siege as they are plagued by a deadly virus, the descolada, to which the native species of the planet seem immune. The pequeninos, the dominant and intelligent species on Lusitania, are friendly though technologically primitive. They are, however, able to learn human languages with ease and are eager to adopt human space technology and science. The colonists, hampered by memories of colonial oppression on earth and the more recent xenocide of the formics, follow a strict code that limits human- alien interaction. The three novels

describe a voyage of discovery in which not only the humans, but also the formics and pequeninos learn to recognise each other as coeval with a shared responsibility towards sustaining the Lusitanian Gaia.

Card reflects on inter-species communication between humans, formics, pequeninos and the descolada viruses and the limits of a symbol based linguistic technology that favours the human form of embodiment in establishing coevalness with non-human forms of life (Wolf 2008:30). He describes three forms of communication with alien species. Symbol using species such as the pequeninos, with whom we may over time be able to communicate and thus recognise as coeval with us. Telepathic species, such as the formics, with whom communication is difficult because the means of communication are so different, but still possible to learn; and species such as the descolada viruses whose means of communication is at the molecular level and involves modifying the basic structure of the beings that are being addressed, and thereby willy-nilly leading to their death. The question posed in the *Saga* is whether the viruses are a weapon created by a warlike species in the quest of galactic domination or a sentient species with a right to life? The most difficult question facing the human scientists on Lusitania is whether the descolada virus communicates with others of its species purely by means of a genetic code or by using a proper linguistic grammar by which messages can be transmitted across space and time. Even more important for the purpose of this essay is the use that Card makes of the descolada virus to explore the Gaia hypothesis as a possible model for planetary co-habitation.

Very early on in the series we learn that the descolada virus has an agentive role in establishing symbiotic relations between species on Lusitania. The various biological species that are native to the planet are paired with vegetable species so that each species participates in two

very different forms of life, first a biological one and then a vegetable one. Thus, pequeninos are born as little worms that grow to adulthood, are ritually sacrificed, and then enter a 'third life' as intelligent trees. The descolada virus has a crucial role to play in this transformation, becoming a part of the organic constitution of the planet itself. It plays the role of Gaia, regulating all life on Lusitania by ruthlessly killing anything that may potentially cause imbalances in its biosphere.[25] Humans, as late immigrants to the planet, are unable to adapt to an environment that has been shaped by the virus and can only survive in an artificial habitat specially created to meet their organic needs.

The ethical question that confronts the human scientists on Lusitania is whether the virus is a sentient species, an autonomous life form, or an artificially created tool for terraforming alien planets prior to their conquest by an expansionist species. Are the intentions of this species benign? Are the adaptive responses that the virus brings about and which are so lethal to human survival, a form of communication based on a bio-genetic medium rather than a sound – based, symbolic one? Like other sentient species the virus is able to create its own milieu, adapting to novel elements in the environment by rapid mutation via messages between its members. Are these messages consciously transmitted and voluntarily received or are these mutations a result of involuntary genetic coding? Most important of all, will killing the viruses destroy all the native forms of life? Would humans be replicating earth's bloody history of colonisation of the Americas?[26] The scientists do manage to 'lobotomize'[27] the virus species, creating a benign variant – the recolada virus that is able to tolerate novelty and sustain the symbiotic relations between the native species of Lusitania without being lethal to humans. The series offers no final answers as to whether the humans are justified in permanently crippling a possibly intelligent life form in their fight for survival. Nevertheless, it does present the descolada story as an allegory of the

anthropocene age and humanity's anthropocentric relationship with other species. The descolada as Lusitania's Gaia ruthlessly engineered a climate to suit its needs and established a static biosphere in which all novelty, such as the entrance of humans as a new species on the planet, was perceived as pollutants, and therefore, as a threat to its stability, to be eliminated. The recolada by contrast does tolerate change and will allow Lusitania to develop in novel ways recognising its creative capacity to self-organise and generate new forms of life.

Conclusion

Bruno Latour (2017) says that the ecological crisis is often presented as the renewed awareness that humans are part of nature, and not distinct from it. The problem with the conventional view of technological intervention that has created this crisis is that humans treat nature as inhuman. Lovelock's genius, according to Latour, is to enable 'nature' that has until now served as a mere backdrop to human history to become an active agent in a history whose canvas is far larger than that of the merely human, and where entities such as microbes and other miniscule organisms that seemed invisible to us, occupy a far more significant role than had been presumed until now. The concept of Gaia enables us to posit a notion of distributed agency very difficult for the humanistic disciplines to conceive (Chakrabarty 2009). It also enables a greater awareness of Gaia's sensitivity to human actions, however insignificant they may seem to us, an awareness fore-grounded by the very naming of our present epoch as the anthropocene.

How does the category of environment emerge in the stories discussed here? The challenge to the human form of life in the face of climate cataclysm is one of the important themes addressed by all the stories. The three comic books discussed here use tropes such as the possibility of multiple earths, a distant post-apocalyptic future and futuristic AI technology as plot devices to

discuss humanity's responsibility in causing this catastrophe. *Ramayan 3392 AD* in particular, contrasts technology, i.e. machines that creatively harness the powers of nature with nature as an organic entity anthropomorphised as Sita – the Indian Gaia. The Sinhas (J. Sinha 2007a, 2007b) play with scientific ideas, but cast them in melodramatic and fantastical modes. Chemical imbalances in the biosphere, the principle of homeostasis and the idea of a self-regulating biosphere are all conceived as anthropomorphic figures. The conception of the cosmos in terms of the masculine and feminine principles, viz. *purusha* and *prakriti* in ancient Indian Sankhya philosophy, underpins the pantheistic view of nature elaborated and contemporised in their stories. In Sankhya philosophy the masculine principle *purusha* is pure consciousness while *prakriti* is creative matter, the dynamic principle embodied in nature. According to Bina Agarwal (1998) some eco feminists in India have used the principle of *prakriti* to propound a more humanised view of nature as counterpoint to the dominant exploitative one that views nature primarily as a source of raw material for human profit. In *Samhaar* (2007a) this dynamic principle embodied in nature is further split into masculine and feminine aspects – the brother-sister duo of Prakrit and Prakriti. Prakriti represents the nurturing, self-regulating aspect of the biosphere, and Prakrit, her brother, the aspect of dynamism and change. Together they constitute Gaia in her benign and destructive aspects. Within the limits of the anthropocentric superhero genre, the Sinhas do find ways of addressing an idea of creation that is not human-centric. Thus, Prakrit is quite prepared to re-model earth in a form that will be inimical to humans – the species that he considers to be the most destructive on earth and it takes the combined forces of our two superheroes – Nagraj and Dhruv to convince him to give humans a second chance (see Lovelock 2006).

The plot device of climate disequilibrium is taken to its extreme limit in the novels of JG Ballard. He is not interested in casting responsibility for this state. In *The Drowned World* (2006)

it becomes a symptom of devolution, of time flowing backwards and of flora, fauna and humans reverting back to the Triassic age. He deconstructs human consciousness into its many layers, and it is only the characters in the book who adapt to the changes in climate and accept the resurfacing of their archaic reptilian memories who are shown to survive. The co-habitation of different species on an endangered planet and the threat of human xenocide are themes that are mentioned, but not of direct concern to the author. He is far more interested in the psychological motivations of the individual characters and their experience of the radical changes in climate (Clarke 2013). It is Orson Scott Card in *Ender's Saga* who explicitly foregrounds these concerns, but on a planet that is far from earth. Co-habitation of different species based on the shared value of life, determined by the willingness to communicate with aliens is the dominant theme of the series.

Since literary 'realism' is unable to conceive of human experience in species terms, it is time that we turned to the 'low genres'.[28] Genres like science fantasy that conceptualise their projects on a planetary scale, projecting our geological concerns on possible future scenarios, deserve our serious attention. The language of science is laden with abstract nouns, dominated by the passive tense and to describe the eventedness of nature, and experience members of other species as persons we may need to turn back to some of the 'low genres' discussed here.

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[1] I am grateful to Sudha Vasan, Amaan Shreyas and Radhika Kanan for comments on this essay.

[2] Clode and Stasiak (2014) classify climate fiction into three periods beginning with ancient myths that deal with floods and apocalypses caused by natural disasters; 1800 - 1930 that saw stories with themes of natural catastrophes. There is a lull until the 1960s because the world was preoccupied with the fear of nuclear warfare they say, but there is a renewed interest in climate change from the 1960s onwards with the thematisation of the Anthropocene giving a new inflection to this theme.

[3] Anupam Sinha created the popular character Dhruv for Raj Comics and is also one of the chief writers and artists for Nagraj, another Raj Comics superhero who will feature in our discussion here. Anupam Sinha was interviewed by Amaan Shreyas and I on December 16, 2019.

[4] Created by Ted Turner and Barbara Pyle, the Planeteers are a team of five children from different continents who have been empowered by Gaia, the spirit of the Earth, to protect her from destruction. They are each given a magic ring that enables them to control one of the elements of nature – Fire, Water, Wind, Earth and Heart. When confronted by eco-villains whose powers are greater than the single elements that they control, they can combine their powers to summon Captain Planet.

[5] Neither of these comics is particularly memorable as an adventure story. However, in the light of critics such as Bell (2014), it is worth noting that the task of defeating the villain in both stories is given to the public at large since the powers of the super villain are beyond the capabilities of a single superhero. While anthropogenic climate change, the representation of social and cultural destabilisation as a result of short-term human goals and scientific hubris, has a fairly long tradition in fantasy and speculative fiction, this is not the central concern in the superhero genre (Yusoff and Gabry 2011).

[6] Viruses as villains are quite popular in horror fantasy comics and even appear in some crossover superhero stories, one such being *Infected* Mishra (2014) that appeared in the Nagraj series.

[7] Translation from Hindi in the above quotations are mine.

[8] Women are the superior gender among the humans in this alternate earth and their saviour is the super heroine Nagrani (Serpent Queen).

[9] Interestingly, animals and plants are able to evolve rapidly to survive rapid atmospheric change as we see in another story scripted by Jolly Sinha (1999) – *Vish/Amrit* (Poison/Nectar).

[10] Cyberpunk is a sub-genre in science fiction that explores the use of futuristic technologies in unexpected ways. The settings of stories in this sub-genre are usually decrepit urban dystopias that juxtapose high technological advancement with the breakdown of social order. Cyberpunk fiction often explores the concept of 'technological singularity' – a time when computers are so advanced that they can evolve independently without human agency and thus become independent of human control, leading to profound changes in human nature and consciousness. Interestingly, it was Vernor Vinge a mathematician and science fiction writer who is known for writing on technological singularity (Seed 2011).

[11] All the major characters in the Ramayana, also figure in this story.

[12] Narak is the equivalent of Hell in the popular imagination of North India.

[13] Vrischik refers to the scorpion and *yakshas* are semi-divine beings who may be benevolent, but can also be mischievous or malevolent as far as humans are concerned

[14] The seven legendary seers had created the *divya drishti*, the God programme, to provide legitimate authority to re-establish political order in the world after the Mahavinaash.

[15] The science fiction texture of the comic is sustained by pseudo-scientific explanation for the symbolic aspects of the Ramayana myth such as Vishwamitra explaining to Rama that his distinctive blue skin (associated with several of the *avataras* of God Vishnu in Hindu mythology) is because he is actually a denizen of another *loka* (dimension) of our multi-dimensional universe. Vishwamitra, the ancient seer, embodies the voice of 'scientific truth' in this story.

[16] This is a new Mithila, created magically from an enchanted tree in Dandakaranya after Ravan's son Meghnad destroyed the old Mithila.

[17] Ron Marz is an established editor in the American commercial comics' industry.

[18] Campbell (1949) propounded the myth of the hero as saviour. The hero, driven by lack in his own society, journeys to strange and fabulous lands where he encounters fantastical creatures who bestow gifts on him after he overcomes them in battle. His encounter with fabulous creatures transforms him spiritually and he is able to bestow boons on his society that frees them from the evils that motivated his quest.

[19] Graphic India used the comics' medium as an incubator to develop characters and plots as intellectual property.

[20] Clarke (2013) describes two phases in what has come to be defined post-facto as 'climate fiction' – mid-20th century to the turn of the millennium beginning with pioneers like Ballard for whom climate cataclysm was framed within the post-apocalyptic science fiction genre and the present in which climate change has become an increasingly important literary theme.

[21] Realism as a literary convention that assumes that language is transparent and can be used to describe everyday life dominates not just fiction writing, but the social sciences as well. It arose as a counter to the elevated subject matters associated with tragedy and epic forms, and focused on quotidian subjects that were closer to life. However, that this mode of writing is also an artifice is often forgotten.

[22] Published in the period 1977-2001, the *Saga* consists of six main novels though there are also many novellas and short stories that explore the lives of the different characters in the story.

[23] A short form of 'answerable', the ansible was coined by the science fiction novelist Ursula LeGuin and appears for the first time in her novel *Rocannon's World* published in 1966. She used it as a plot device to create stories about inter-galactic civilisations that can communicate with each other in real time without actually being physically co-present since physical travel between galaxies is still presented as being possible only at the speed of light at best. Time travel using hibernation as a means of extending biological life is the only way in which inter-galactic travel is possible in the Ender Saga.

[24] The time lag involved in space travel has kept him from aging at the normal rate for earth-based humans.

[25] Lovelock (1979) posited the Gaia hypothesis precisely to take account of the homeostasis of the biosphere in spite of the constant chemical disequilibrium of the earth's atmosphere.

[26] There is an implicit reference to colonisation in the ancestry of the colonists – Portuguese speaking, Brazilians of African descent.

[27] One of the scientists who first posed the idea that the descolada might be a sentient species with whom it may be possible to communicate in the future uses this term in the series.

[28] Realism as a literary convention that assumes that language is transparent and can be used to describe every day life, dominates not just fiction writing but the social sciences as well. It arose as a counter to the elevated subject matters associated with tragedy and epic forms and focused on quotidian subjects that were closer to life. However, that this mode of writing is also an artifice is often forgotten.